PROLiNK®

www.prolink2u.com

USER MANUAL

PROLiNK® PWH2004

3G HPSA Wireless Router

Revision 1.0 (Aug'09)

your Global Info Communications Provider

Bangladesh | Brunei | Cambodia | Fiji | | Indonesia | Madagascar | Maldives | Malaysia | Mauritius | Mongolia | Myanmar | Nepal | Philippines | Singapore | Sri Lanka | Taiwan | Thailand | USA | Vietnam | Yugoslavia

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TRADEMARKS

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FCC INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against radio interference in a commercial environment. This equipment can generate, use and radiate radio frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are necessary to correct the interference.

CE DECLARATION OF CONFORMITY

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022/A1 Class B.

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CHAPTER 1 – PACKAGE CONTENTS

Importance: Check your product package contents FIRST.

The PROLiNK® PWH2004 Wireless HSPA Router package should contain the items listed below. If any of the items are missing, please contact your reseller immediately!

❶ One (1) Unit of PROLiNK® PWH2004 3G HSPA Wireless Router with 2 antennas
❷ One (1) Piece of Quick Installation Guide
❸ One (1) Piece of Setup CD
❹ One (1) Piece of RJ-45 Cable (≈1M length)
❺ One (1) Unit of Power Adapter

CAUTION:
Using a power supply with a different voltage rating than the one included with the PROLiNK® PWH2004 Wireless HSPA Router will cause damage and void the warranty for this product.

System Requirements for Configuration

1. A compatible either USB HSPA modem with service,
2. Computers with Windows, Macintosh, or Linux-based operating systems with an installed Ethernet adapter,
3. Internet Explorer version 6.0 or Netscape Navigator version 7.0 and above.

Note: Subject to services and service terms available from your carrier.

Wi-Fi System Requirements

- A 802.11b, 802.11g, or 802.11n USB Dongle (USB Wireless Adapter)

CHAPTER 2 – INTRODUCTION

The PROLiNK® PWH2004 Wireless HSPA Router is a draft 802.11n/b/g compliant Wireless Broadband Router with 4-port Fast Ethernet Switch. It is designed with the latest Draft 802.11n technology that delivers up to 150Mbps wireless, provides multi-functional capabilities, particularly the high-performance throughput and high-quality security to propose an integrated, thorough SOHO solution. The incredible speed of the PROLiNK® PWH2004 Wireless HSPA Router makes it ideal for media-centric applications like streaming video, gaming, and Voice over IP technology, ensure optimum performance and maximum coverage with an external antenna. With the PROLiNK® PWH2004 Wireless HSPA Router, government employees or corporate users can create a wireless network and provide colleagues with remote access to their secure private networks. By installing the PROLiNK® PWH2004 Wireless HSPA Router on a bus, train, or even a boat, you can allow passengers to check e-mail or chat online while commuting.

2.1 Overview of the Device

2.1.1 Front View

Front View

	LED	Label	Color	Behavior	Indication
❶	POWER	**Power**	Green	ON	Power On
				OFF	Power Off
❷	WLAN/WPS	**WLAN/WPS**	Green	On	WLAN link or WPS Active
				Off	WLAN Off
				Blinking	WLAN traffic transmitting
			Orange	Blinking	WPS is enabled to make connection
❸	WAN	**WAN**	Green	On	WAN link or active
				Off	WAN Off
				Blinking	WAN traffic transmitting
❹	LAN1 ~ LAN4	1 2 3 4 LAN	Green	On	LAN link or active
				Off	LAN Off
				Blinking	LAN traffic transmitting

2.1.2 Rear View

Rear View

	Port / Button	Indication
❶	WPS	To enable the WPS function via web configuration (Wireless ► WPS), then press the WPS button once on the Wireless Router; the WPS LED will start to flash. To make a connection with other WPS supported device within 3 minutes.
❷	RESET	Keep on pressing the Reset button more than 3 seconds, the Wireless Router will set all setting back to factory default values.
❸	LAN 1~4	Use standard LAN cables (RJ45 connectors) to connect your PCs to the port. If required, any port can be connected to another hub. Any LAN port will automatically function as an "Uplink" port when necessary.
❹	WAN	Connect the ADSL or Cable Modem here with RJ45 cable. If your modem came with a cable, use the supplied cable, otherwise, use a standard LAN cable.
❺	POWER	

2.1.3 Side View

Side View

❶ USB 2.0 Port Insert the USB 3.5G card that provided by your ISP (Internet Service Provider) here.

2.2 Features of the Device

- Support the IEEE 802.11n/b/g standard, high speed date rate up to 300Mbps.
- **Support USB 2.0 storage function device**
- Support WPS (Wi-Fi Protected Setup) with reset button.
- High security with build-in Security: WEP 64/128, WPAPSK,WPA2PSK, WPA, WPA2, 802.1x and 802.11i
- Support Router, WDS (Bridge + Repeater)
- Wireless Quality of Service (QoS) - 802.11e,WMM
- Easy configuration for home user setup.

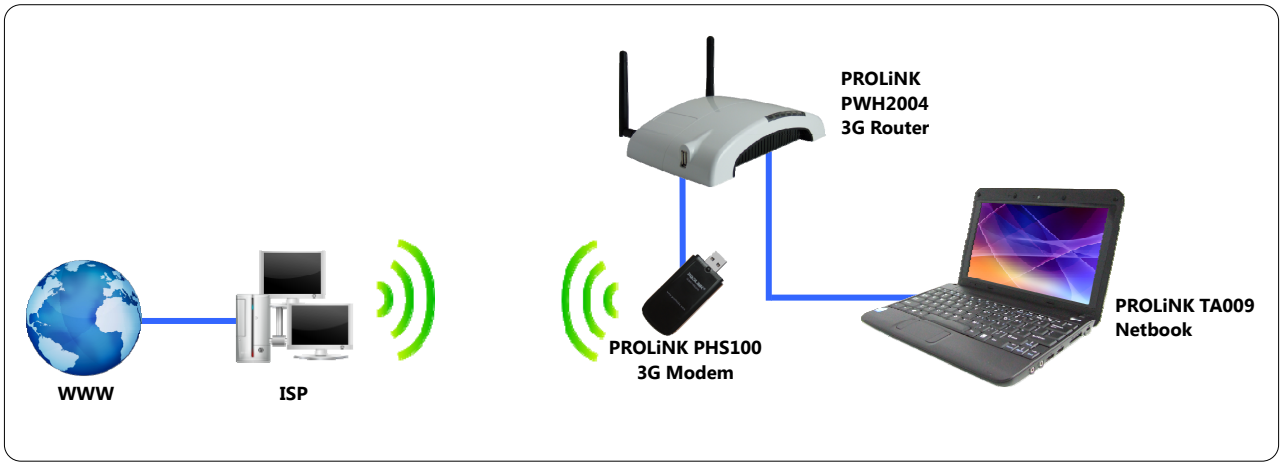
CHAPTER 3 – OPERATION MODES

Please go to the Wireless▶WDS to set up the WDS function (Bridge or Repeater) of the Wireless Router.

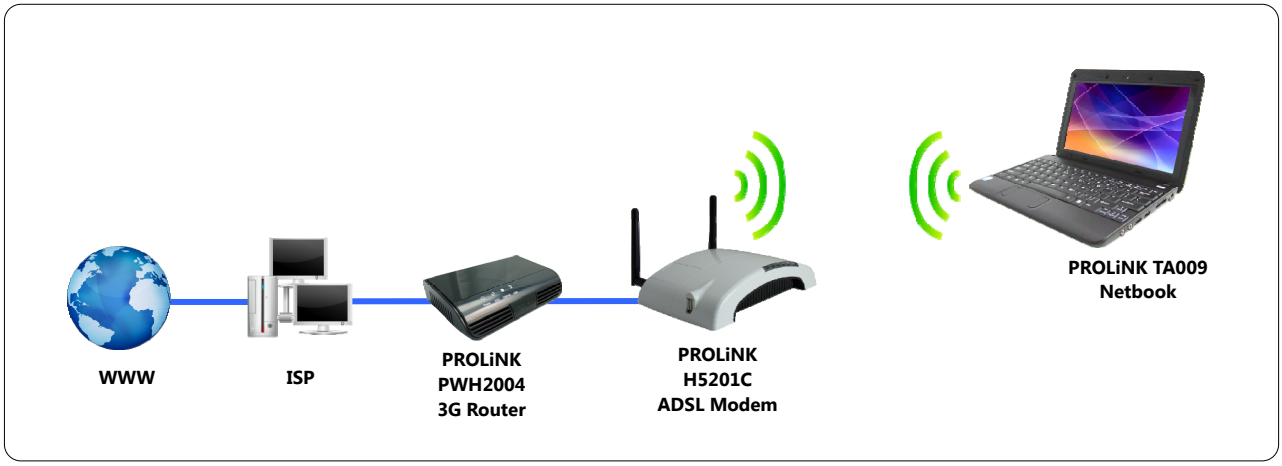
3.1 Gateway Mode

The wireless connection will be set up from a point-to-point local LAN into a point-to-multipoint WAN. This device connects all the stations (PC/notebook with wireless function) to a wireless network. All stations can have the Internet access if only the device has the Internet connection.

Scenario 1



Scenario 2

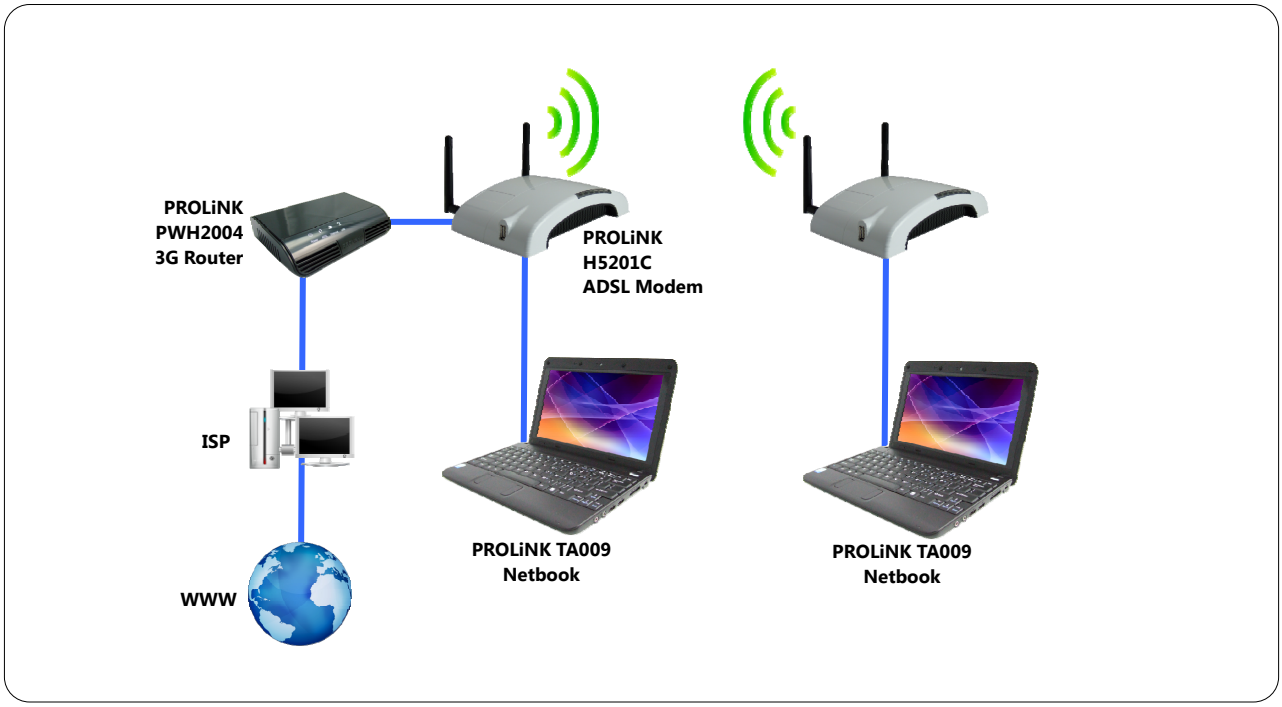


3.2 Bridge Mode (WDS)

The WDS (Wireless Distributed System) function lets this access point act as a wireless LAN access point and repeater at the same time. Users can use this feature to build up a large wireless network in a large space like airports, hotels and schools and so on. This feature is also useful when users want to bridge networks between buildings where it is impossible to deploy network cable connections between these buildings.

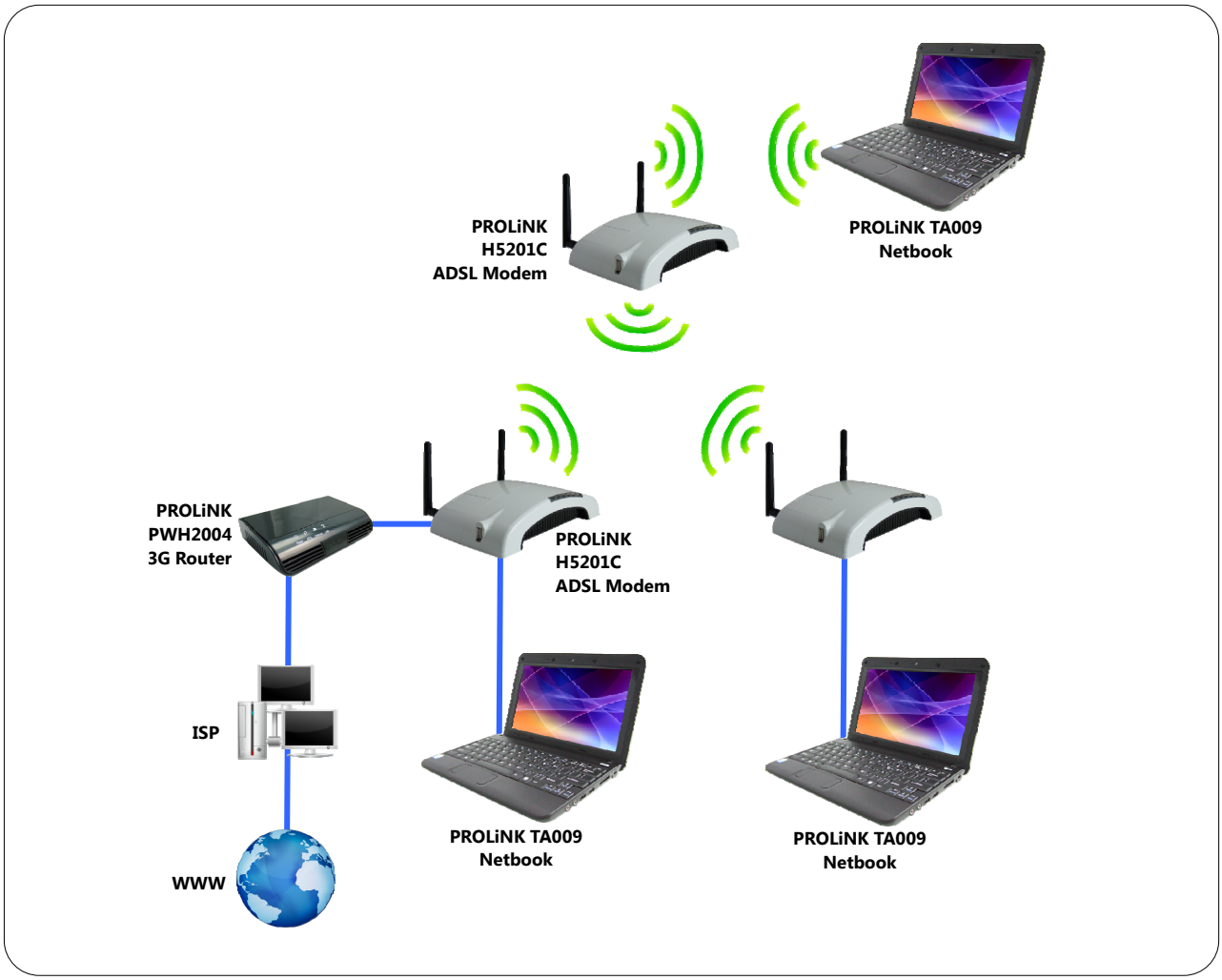
In this mode, all Ethernet ports and wireless interface are bridge together and NAT function is disabled. All the WAN related function and firewall are not supported.

Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and wireless MAC address to each other APs that you want to communicate with.



3.3 Repeater Mode (WDS+AP)

If set to Repeater mode, a device connects to each other through an access point or a base station (gateway or router.) This device can also work like a wireless station when it's connected to a computer directly, so that the computer can send packets from wired end to wireless interface.



CHAPTER 4 – CONFIGURATION

4.1 Hardware Connection

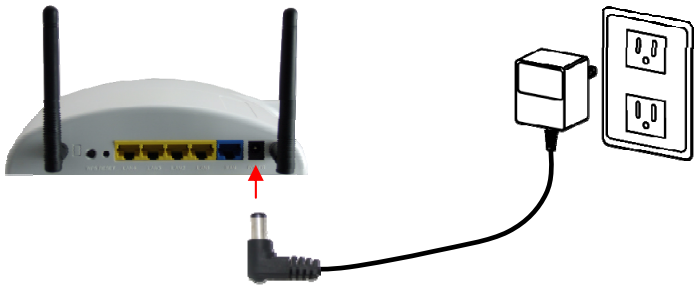
4.1.1 Connect one end of the Ethernet cable to the LAN port of the PWH2004 Wireless HSPA Router, another end to your PC or Notebook

4.1.2 There are two connection methods to connect to Internet (Only one can be selected):

▶ Connection via HSPA (3G) Modem

▶ Connection via ADSL Modem

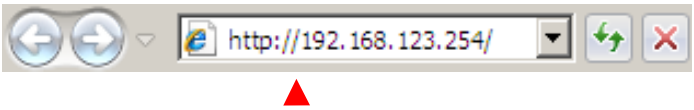
4.1.3 Finally, connect the PWH2001 Wireless HSPA Router with a power to an outlet.



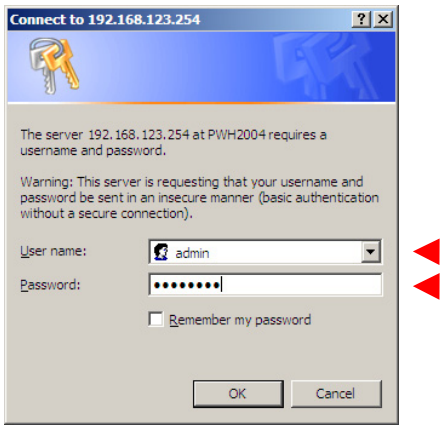
4.2 Login to Router

4.2.1. Start your computer and make sure the connection by an Ethernet cable between your computer and the PWH2004 Wireless HSPA Router.

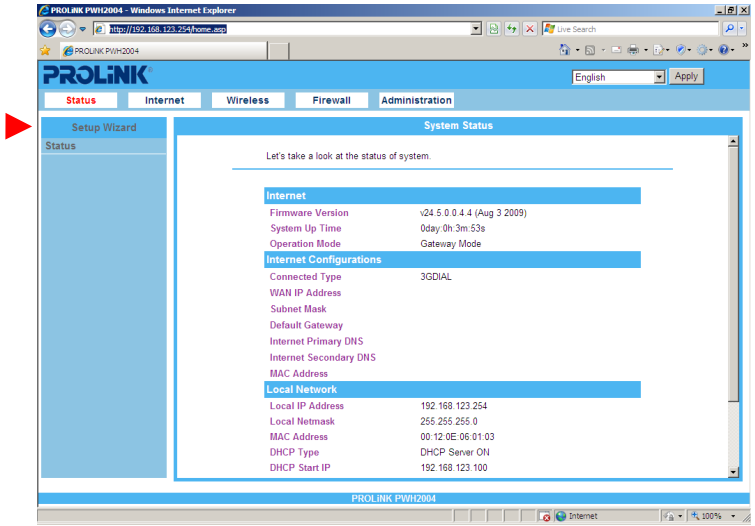
4.2.2. Start a web browser, type IP address "192.168.123.254" into address box



4.2.3. After connected successfully, the login screen will be prompted on screen. Default username is '***admin***' and password is '***password***'.


Connect to 192.168.123.254
The server 192.168.123.254 at PWH2004 requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name:
admin
Password:
Remember my password
OK
Cancel

4.2.4. Click the Setup Wizard item that provides a primary configuration of the PWH2004 Wireless HSPA Router.



NOTE:
If you have difficult in connecting the PWH2004 Wireless HSPA Router, refer to Appendix A for troubleshoots.

4.3 Common types of connections

4.3.1. Cable Modems

Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connect to you ISP.	Usually, none. However, some ISP's may require you to use a particular Hostname, Domain name, or MAC (physical) address.
Static (Fixed) IP Address	Your ISP allocates a permanent IP Address to you.	IP Address allocated to you. Some ISP's may also require you to use a particular Hostname, Domain name, or MAC (physical) address.

4.3.2. DSL Modems

Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connect to you ISP.	None.
Static (Fixed) IP Address	Your ISP allocates a permanent IP Address to you.	IP Address allocated to you.
PPPoE	You connect to the ISP only when required. The IP address is usually allocated automatically.	User name and password.

4.3.3. HSPA Modems

Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connected to your HSPA ISP.	The ISP may require you to use a particular Hostname, Domain name, or MAC (Physical) address

4.4 Wizard (Gateway Mode)

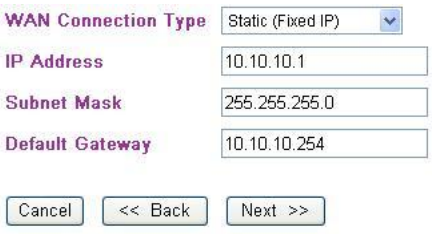
4.4.1. WAN Connect Detection

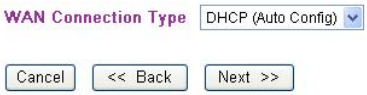
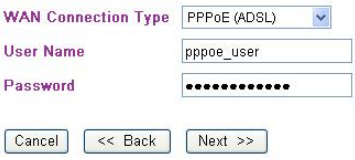
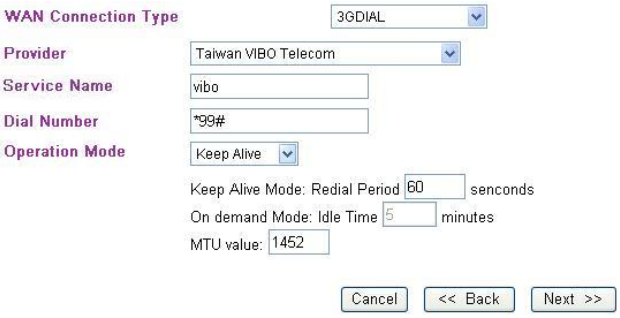
This page is used to detect the WAN connection of network. User can select Auto Detect form the pull-down menu and click Start Auto Detect button, the system will detect whether there is WAN connection or not. If user wants to set up the WAN detection manually, please select Manual form the pull-down menu, then click Next to continue.

Select	To use the WAN detect function, user can select Manual or Auto Detect form the pull-down menu.
WAN Detection	Select Auto Detect form the pull-down menu and click Start Auto Detect button, the detecting screen will be pop-up to detect whether there is WAN connection or not. If user wants to set up the WAN detection manually, please select Manual form the pull-down menu, then click Next to continue.
Detect Result	Here shows the WAN detection result. If there is no WAN connection, the system will show NONE or Unplugged Cable.

4.4.2. WAN Access Types

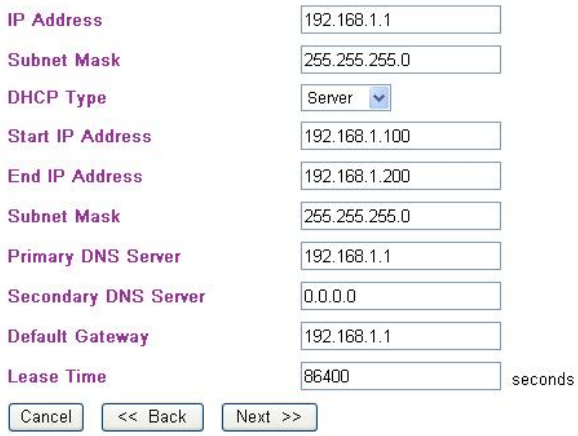
Here user can set up the WAN connection type easily. Select the WAN Connection Type Static (Fixed IP), DHCP (Auto Config), PPPoE (ADSL), or 3G (DIAL) and click Next to continue.

Static (Fixed IP)	 If the Static IP be selected, user has to set up the IP address, subnet mask and default gateway according to the ISP that provided the related information. IP Address: Enter the WAN IP address provided by your ISP here. Subnet Mask: Enter the subnet mask here. Default Gateway: Enter the default gateway IP address provided by your ISP here.

DHCP (Auto Config)	 If the DHCP (Auto Config) be selected, the PC will obtain the IP address automatically.
PPPoE (ADSL)	 If the PPPoE (ADSL) be selected, user has to set up the user name and password according to the ISP that provided the related information. User Name: Enter the username that provide by your ISP provider. Maximum input is 32 alphanumeric characters (case sensitive). Password: Enter the password that provide by your ISP provider. Maximum input is 32 alphanumeric characters (case-sensitive).
3G Dial	 User have to insert USB card therefore, the 3G (DIAL) function can be used. Provider: Select the ISP (Telecommunications) that provide the USB card from the pull-down list. Service Name: Enter the service name that the ISP provided. Dial Number: Enter the dial number that the ISP provided. Operation Mode: Select Keep Alive, On Demand or Manual form the pull-down list. • Keep Alive Mode: Enter the Redial Period seconds in the box. • On demand Mode: Enter the Idle Time minutes in the box. • MTU Value: MTU (Maximum Transmission Unit, namely the maximum packet size, the default value is 1452) for your application. Reducing the packet size can help connecting to certain web sites or speeding up packet transfer rate. If the incorrect selection is entered, you may not be able to open certain web sites.

4.4.3. LAN

This step can set up local area network of the Wireless Router, such as IP address, subnet mask, DHCP type, DHCP IP addresses range, and DHCP subnet mask and DHCP lease time.



IP Address	Shows the IP address of the Wireless Router (Default IP address is 192.168.1.1).
Subnet Mask	The subnet mask of the Wireless Router (Default subnet mask is 255.255.255.0).
DHCP Type	Disable: Select to disable this Wireless Router to distribute IP addresses to connected clients. Server: Select to enable this Wireless Router to distribute IP Addresses (DHCP Server) to connected clients. And the following field will be activated for you to enter the starting IP Address.
Start IP Address	The starting addresses of this local IP network address pool. The pool is a piece of continuous IP address segment. Keep the default value 192.168.1.100 should work for most cases.
End IP Address	The end IP address, the maximum is 254. If "Start IP Address" is set at 192.168.1.100 and the "End IP address" is 192.168.1.200, the device will distribute IP addresses from 192.168.1.100 to 192.168.1.200 to all the computers in the network that request IP addresses from DHCP server (Router).
Subnet Mask	The subnet mask of the distribute IP addresses clients, the subnet mask must be set at the same segment as the Wireless Router.
Primary & Secondary DNS Server	The DNS should be set to the address provided by your ISP.
Default Gateway	Enter the default gateway IP address provided by your ISP in this column.
Lease Time	The lease time of the distribute IP Addresses. Default settings are 86400 seconds.

4.4.4. Network Mode

This step can set up wireless network mode, network name and channel.

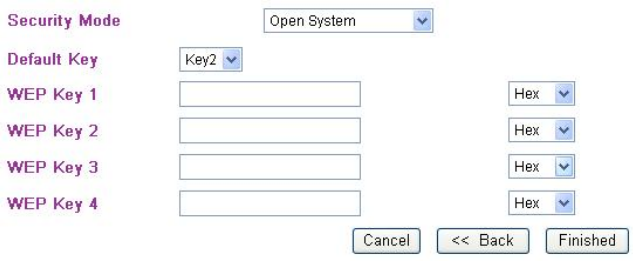
Network Mode	Select 11b/g mixed mode, 11b only, 11g only, or 11b/g/n mixed mode from the pull-down menu (Default is 11b/g/n mixed mode).
Network Name (SSID)	A SSID is referred to a network name because essentially it is a name (case-sensitive) that identifies a wireless network.
Frequency (Channel)	Select 1~11 or Auto Select from the pull-down menu.

4.4.5. Security

Here can set up the wireless security of the Wireless Router.

Select desired security type from the pull-down menu Disable, Open System, Shared Key, AUTO (Open/Shared), WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK. The default setting is Disable. It is strongly recommended to set up security mode (Open, Shared, AUTO (Open/Shared), WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK) to prevent any unauthorized accessing.

Open System
Shared Key
AUTO (Open/Shared)



Default Key: Select the default key Key1~4.

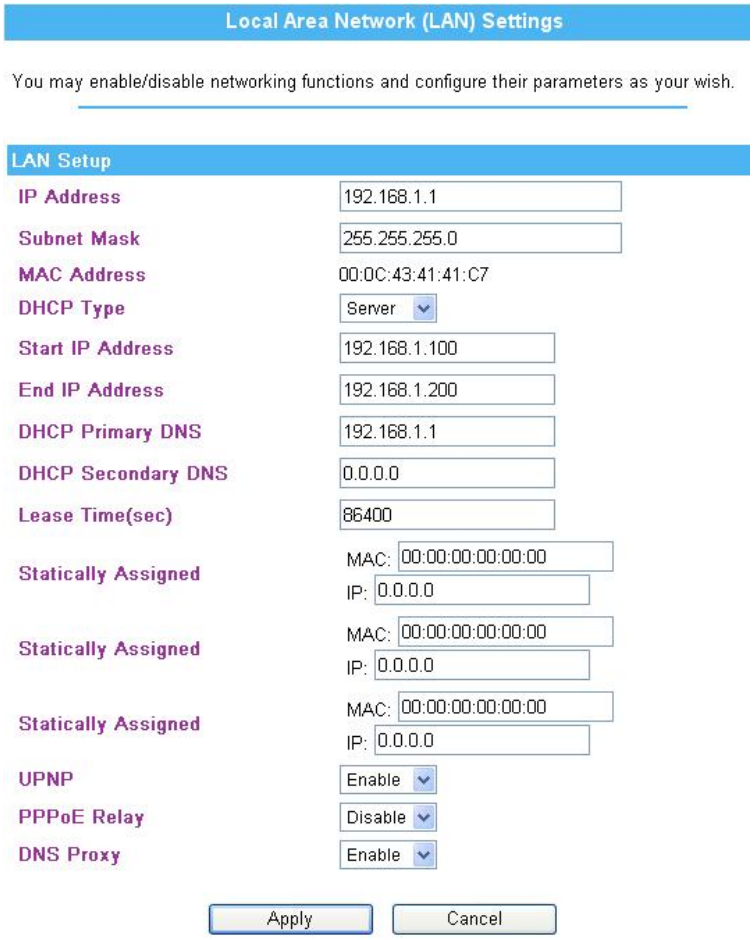
WEP Key 1~4: Enter the key in the selected key field. Only valid when using WEP encryption algorithm. The key must match with the AP's key. There are several formats to enter the keys.

- Hexadecimal (WEP 64 bits): 10 Hex characters (0~9, a~f).
- Hexadecimal (WEP 128 bits): 26 Hex characters (0~9, a~f).
- ASCII (WEP 64 bits): 5 ASCII characters (case-sensitive).
- ASCII (WEP 128 bits): 13 ASCII characters (case-sensitive).

WPA-PSK **WPA2-PSK** **WPA-PSK** **WPA2-PSK**	 WPA Algorithms: Select the type of algorithm, TKIP or AES for WP-PSK; and TKIP, AES or TKIP/AES for WPA2-PSK, WPA-PSK/WPA2- PSK. Pass Phrase: Enter the pass phrase 8~63 ASCII or 64 hexadecimal characters in the column.

4.5 Internet

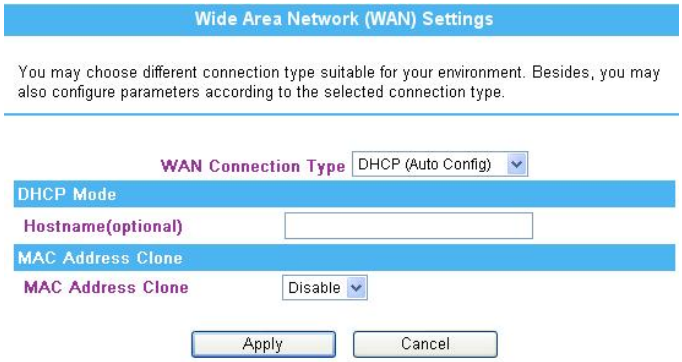
4.5.1. LAN Interface Setup



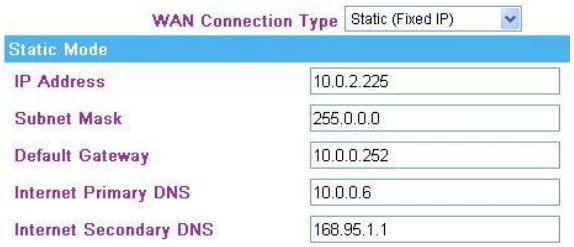
IP Address	Shows the IP address of the Wireless Router (Default IP address is 192.168.1.1).
Subnet Mask	The subnet mask of the Wireless Router (Default subnet mask is 255.255.255.0).
MAC Address	Shows the MAC address of this Wireless Router.

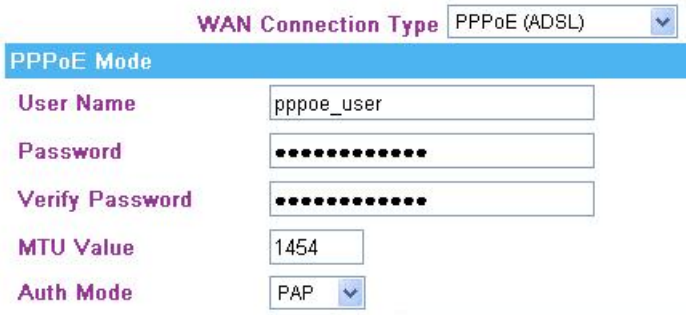
DHCP Type	Disable: Select to disable this Wireless Router to distribute IP addresses to connected clients. Server: Select to enable this Wireless Router to distribute IP Addresses (DHCP Server) to connected clients. And the following field will be activated for you to enter the starting IP Address.
Start IP Address	The starting addresses of this local IP network address pool. The pool is a piece of continuous IP address segment. Keep the default value 192.168.1.100 should work for most cases.
End IP address	The end IP address, the maximum is 254. If "Start IP Address" is set at 192.168.1.100 and the "End IP address" is 192.168.1.200, the device will distribute IP addresses from 192.168.1.100 to 192.168.1.200 to all the computers in the network that request IP addresses from DHCP server (Router).
Subnet Mask	The subnet mask of the distribute IP addresses clients, the subnet mask must be set at the same segment as the Wireless Router.
DHCP Primary DNS Server	You can specify your own preferred DNS server IP address(es).
DHCP Secondary DNS Server	Secondary DNS Server is optional. You can enter another DNS server's IP address as a backup.
Default Gateway	Shows the default gateway IP address.
Lease Time	The lease time of the distribute IP Addresses. Default settings are 86400 seconds.
Statically Assigned	MAC: Enter the MAC address of a certain station, and then the DHCP Server will to distribute a fixed IP address to the station automatically once be connected. IP: Enter the fixed IP address that DHCP Server assigned to a certain connected station. User can set up 3 set of fixed IP addresses that distribute form the Wireless Router when the DHCP Type function be selected to Server.
UPNP	Universal Plug and Play (UPnP) is a set of computer protocols promulgated by the UPnP Forum. The goals of UPnP are to allow devices to connect seamlessly and to simplify the implementation of networks in the home (data sharing, communications, and entertainment) and in corporate environments for simplified installation of computer components. UPnP achieves this by defining and publishing UPnP device control protocols built upon open, Internet-based communication standards. The term UPnP is derived from plug-and-play, a technology for dynamically attaching devices directly to a computer. Select Disable or Enable from the pull-down menu.
PPPoE Relay	Select Disable or Enable from the pull-down menu.
DNS Proxy	Select Disable or Enable from the pull-down menu.
Apply	After completing the settings on this page, click Apply button to save the settings.
Cancel	Click Cancel to restore to default values.

4.5.2. Internet Service Setup



Select the WAN Connection Type Static (Fixed IP), DHCP (Auto Config), PPPoE (ADSL), or 3G (DIAL). Default setting is DHCP (Auto Config) enabled.

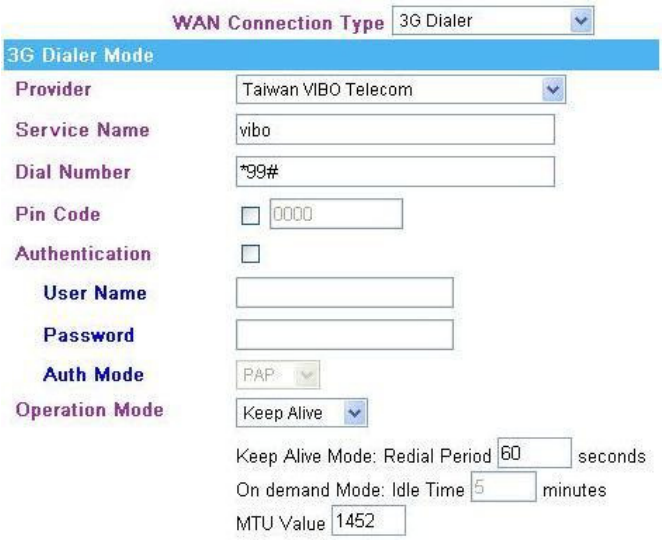
DHCP (Auto Config)	 If the DHCP (Auto Config) be selected, the PC will obtain the IP address automatically. Hostname (optional): Enter the hostname that assigned IP address to user's computer in this field. Maximum input is 32 alphanumeric characters (case sensitive).
Static (Fixed IP)	 If the Static (fixed IP) be selected, user has to set up the IP address, subnet mask and default gateway according to the ISP that provided the related information. IP Address: Enter the WAN IP address provided by your ISP here. Subnet Mask: Enter the subnet mask here. Default Gateway: Enter the default gateway IP address provided by your ISP here. Primary DNS Server: Enter the DNS server IP address(es) that provided by your ISP, or you can specify your own preferred DNS server IP address(es). Secondary DNS Server: Secondary DNS Server is optional. You can enter another DNS server's IP address as a backup.

<table>
<tr>
<td>PPPoE (ADSL)</td>
<td>


If the PPPoE (ADSL) be selected, user has to set up the user name and password according to the ISP that provided the related information.

User Name: Enter the username that provide by your ISP provider. Maximum input is 32 alphanumeric characters (case sensitive).
Password: Enter the password that provide by your ISP provider. Maximum input is 32 alphanumeric characters (case-sensitive).
Verify Password: Enter the password again to confirm.
MTU Value: MTU (Maximum Transmission Unit, namely the maximum packet size, the default value is 1452) for your application. Reducing the packet size can help connecting to certain web sites or speeding up packet transfer rate. If the incorrect selection is entered, you may not be able to open certain web sites.
Auth Mode: Select the authentication mode form the pull-down list.
</td>
</tr>
</table>

3G (DIAL)



User have to insert USB card therefore, the 3G(DIAL) function can be used.

Provider: Select the ISP that provides the USB card from the pull-down list.

Service Name: Enter the service name that ISP provided.

Dial Number: Enter the dial number that ISP provided.

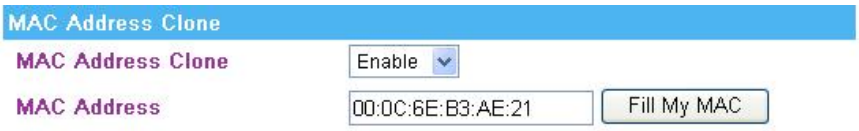
Pin code: Enter the SIM card Pin code that ISP provided.

Authentication: Check the box to enable to authentication function.

- User Name: Enter the user name that provide by your ISP.
- Password: Enter the password that provide by your ISP.
- Auth Mode: Select the authentication mode form the pull-down list.

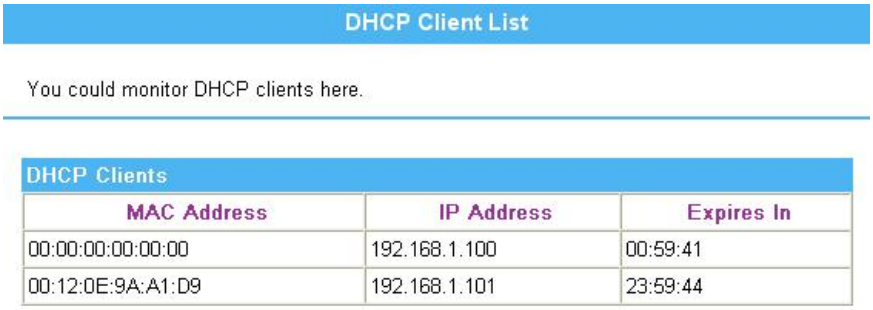
Operation Mode: Select Keep Alive, On Demand or Manual form the pull-down list.

- Keep Alive Mode: Enter the Redial Period seconds in the box.
- On demand Mode: Enter the Idle Time minutes in the box.
- MTU Value: MTU (Maximum Transmission Unit, namely the maximum packet size, the default value is 1452) for your application. Reducing the packet size can help connecting to certain web sites or speeding up packet transfer rate. If the incorrect selection is entered, you may not be able to open certain web sites.

MAC Clone	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in or click Fill my MAC to replace the WAN MAC address with the MAC address of that PC. Default setting is Disable. User can select Enable form the pull-down list, and click Fill my MAC button to fill in your PC's MAC address in the blank field. 
Apply	After completing the settings on this page, click Apply button to save the settings.
Cancel	Click Cancel to restore to default values.

4.5.3. DHCP Clients

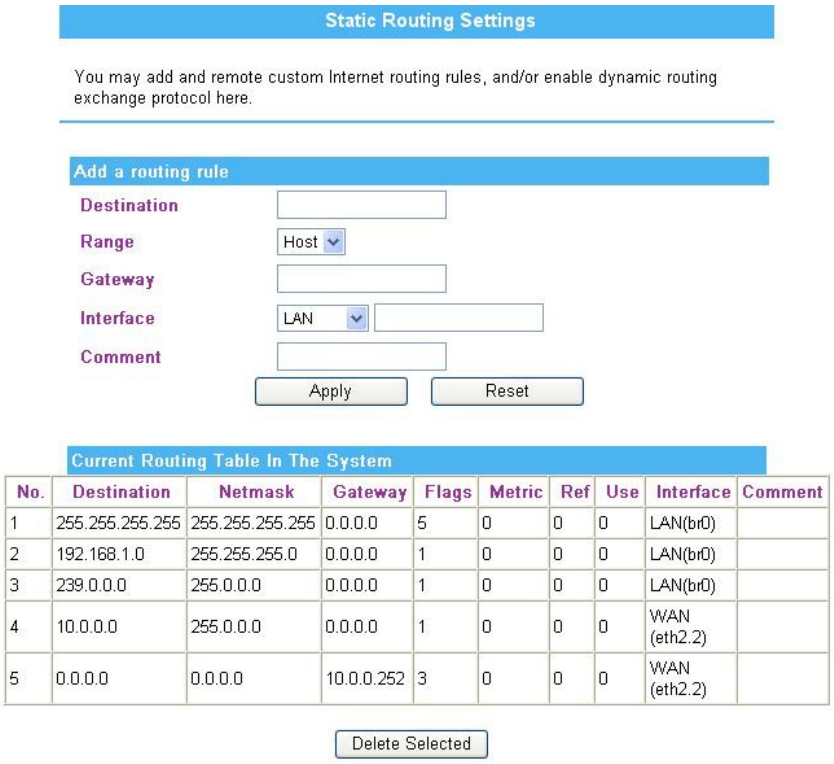
Here shows the IP assigned clients that computer in the network requests IP addresses from DHCP server (Wireless Router).



4.5.4. Advance Routing

If you connect several routers with this Wireless Router, you may need to set up a predefined routing rule to have more effective network topology/traffic, this is called static route between those routers and the Wireless Router.

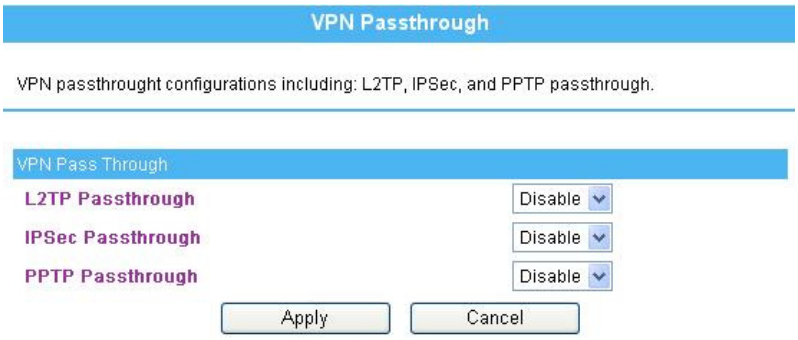
To set static routers, enter the settings including route IP address, route mask route gateway the route Interface from LAN or WAN.


Static Routing Settings
You may add and remote custom Internet routing rules, and/or enable dynamic routing exchange protocol here.
Add a routing rule
Destination
Range
Host
Gateway
Interface
LAN
Comment
Apply
Reset
Current Routing Table In The System
No. Destination Netmask Gateway Flags Metric Ref Use Interface Comment
1 255.255.255.255 255.255.255.255 0.0.0.0 5 0 0 0 LAN(br0)
2 192.168.1.0 255.255.255.0 0.0.0.0 1 0 0 0 LAN(br0)
3 239.0.0.0 255.0.0.0 0.0.0.0 1 0 0 0 LAN(br0)
4 10.0.0.0 255.0.0.0 0.0.0.0 1 0 0 0 WAN (eth2.2)
5 0.0.0.0 0.0.0.0 10.0.0.252 3 0 0 0 WAN (eth2.2)
Delete Selected

Destination	The network address of the destination LAN segment. When a packet with destination IP address that matches to this field, it will route to the device set in the Route Gateway field.
Range	Select Host or Net from the pull-down menu.
Gateway	Enter the Gateway IP address in the field.
Interface	You can select to use LAN, WAN or Custom as the physical interface from where the packets will be sent.
Comment	Enter note or remark here.
Dynamic Routing Settings	Select Disable or Enable form pull-dowm list to use the RIP function.
Apply	After completing the settings on this page, click Apply button to save the settings.
Reset	Click to discard current setting.

4.5.5. VPN Passthrough

VPN passthrough configurations including: L2TP, IPSec, and PPTP passthrough.



L2TP Passthrough	L2TP, Layer Two Tunneling Protocol (L2TP). Use the L2TP with VPN that user can access the personal network via Internet. Select Enabled or Disabled from the pull-down menu.
IPSec Passthrough	IPSec, Internet Protocol Security. Select Enabled or Disabled from the pull-down menu.
PPTP Passthrough	PPTP, Point-to-Point Tunneling Protocol. Select Enabled or Disabled from the pull-down menu.

4.6 Wireless

4.6.1. Basic

Radio On/Off	Click Radio ON/OFF button to turn on or off the radio function.
Network Mode	Select 11b/g mixed, 11b only, 11g only, or 11b/g/n mixed mode from the pull-down menu. (Default is 11b/g/n mixed mode.)
Network Name (SSID)	A SSID is referred to a network name because essentially it is a name that identifies a wireless network (case-sensitive).
Multiple SSID 1~3	A multiple SSID is referred to a network name because essentially it is a name that identifies a wireless network.
Broadcast Network Name(SSID)	Enable: This wireless AP will broadcast its SSID to stations. Disable: This wireless AP will not broadcast its SSID to stations. If stations want to connect to this wireless AP, this AP's SSID should be known in advance to make a connection.
AP Isolation	Select Enable or Disable to enable this function.
MBSSID AP Isolation	Select Enable or Disable to enable this function.

BSSID	Shows the MAC address of the Wireless Router.
Frequency (Channel)	Select 1~11 or Auto Select from the pull-down menu.

HT Physical Mode	
Channel Band Width	Select 20 or 20/40. (Default setting is 20/40.)
Guard Interval	Select Long or Auto. (Default setting is Auto.)
MCS	Select form the pull-down menu 0~7 or Auto. (Default setting is Auto.)
Decline BA Request	Select Disable or Enable. (Default setting is Disable.)

4.6.2. Security

Wireless Security/Encryption Settings	
SSID Choice	Select SSID to set up the security form the pull-down list.

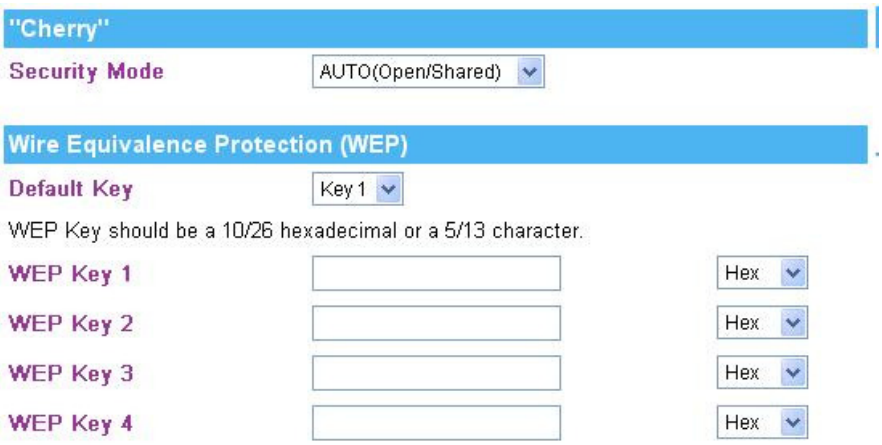
There are eleven types of authentication modes including Disable, Open System, Shared Key, AUTO (Open/Shared), WPA, WPA-PSK, WPA2, WPA2-PSK, WPA-PSK/ WPA2-PSK, WPA1/WPA2 and 802.1X. The security default setting is Disable.

Note:

- WPA and WPA-PSK only support TKIP and AES as encryption method.
- Shared Key only supports WEP as encryption method.
- AUTO (Open/Shared) means AP can accept STA connect to it using OPEN-WEP or SHARED-WEP.

AUTO (Open/Shared)

If your wireless router is using Open System or AUTO (Open/Shared) authentication, then the wireless adapter will need to be set to the same authentication type.



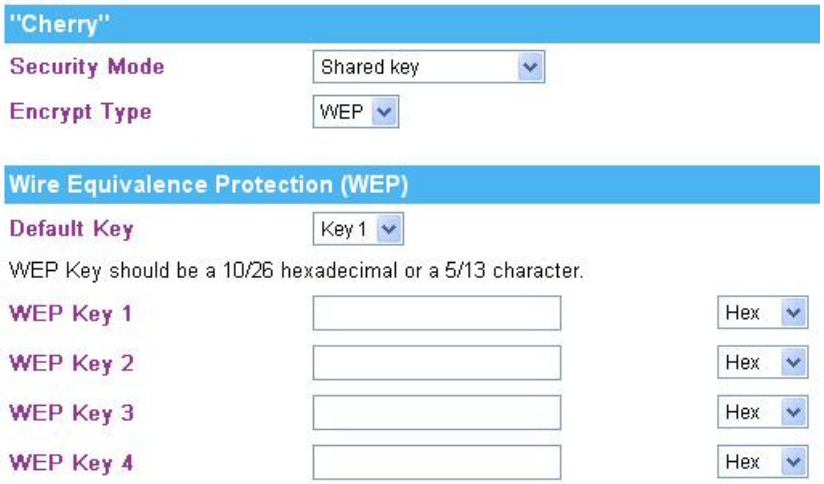
Default Key: Select the default key.

WEP Key 1~4: Enter the key in the selected key field. Only valid when using WEP encryption algorithm. The key must match with the AP's key. There are several formats to enter the keys.

- Hexadecimal (WEP 64 bits): 10 Hex characters (0~9, a~f).
- Hexadecimal (WEP 128 bits): 26 Hex characters (0~9, a~f).
- ASCII (WEP 64 bits): 5 ASCII characters (case-sensitive).
- ASCII (WEP 128 bits): 13 ASCII characters (case-sensitive).

Shared Key

Shared key is when both the sender and the recipient share a secret key.



Encryption Type: The encryption type is WEP.

Default Key: Select the default key 1~4.

WEP Key 1~4: Enter the key in the selected key field. Only valid when using WEP encryption algorithm. The key must match with the AP's key. There are several formats to enter the keys.

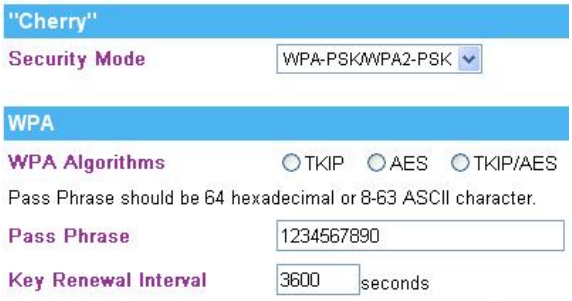
- Hexadecimal (WEP 64 bits): 10 Hex characters (0~9, a~f).
- Hexadecimal (WEP 128 bits): 26 Hex characters (0~9, a~f).
- ASCII (WEP 64 bits): 5 ASCII characters (case-sensitive).
- ASCII (WEP 128 bits): 13 ASCII characters (case-sensitive).

WPA
WAP2
WPA1 WPA2

WPA Algorithms:	Select the type of algorithm TKIP or AES for WPA, and TKIP, AES or TKIP/AES for WPA2, WPA/WPA2.
Key Renewal Interval:	Enter the renewal security time (seconds) in the column. Default is 3600 seconds. Set 0 to disable re-key.
RADIUS Server:	RADIUS is an authentication, authorization and accounting client-server protocol. The client is a Network Access Server that desires to authenticate its links. The server is a server that has access to a user database with authentication information.
IP Address:	Enter the RADIUS Server's IP Address provided by your ISP.
Port:	Enter the RADIUS Server's port number provided by your ISP. (The default is 1812.)
Shared Secret:	Enter the password that the Wireless Router shares with the RADIUS Server.
Session Timeout:	Session timeout interval is for 802.1x re-authentication setting. Set to zero to disable 802.1x re-authentication service for each session. Session timeout interval unit is second and must be larger than 60.
Idle Timeout:	Enter the idle timeout in the column.

- PMK Cache Period: Only valid in WPA2 security. Set WPA2 PMKID cache timeout period, after time out, the cached key will be deleted. PMK Cache Period unit is minute.
- Pre-Authentication: Only valid in WPA2 security. The most important features beyond WPA to become standardized through 802.11i/WPA2 are: pre-authentication, which enables secure fast roaming without noticeable signal latency.

WPA-PSK
WAP2-PSK
WPA-PSK
WPA2-PSK

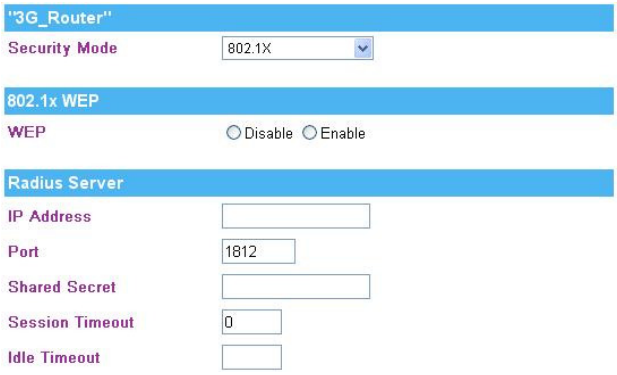


WPA Algorithms: Select the type of algorithm TKIP or AES for WP-PSK, and TKIP, AES or TKIP/AES for WPA2-PSK, WPA1 PSK WPA2 PSK.

Pass Phrase: Enter the pass phrase 8~63 ASCII or 64 HEX characters in the column.

Key Renewal Interval: Enter the renewal security time (seconds) in the column. Default is 3600 seconds. Set 0 to disable re-key.

802.1x



WEP: Select Disable or Enable to this function.

RADIUS Server: RADIUS is an authentication, authorization and accounting client-server protocol. The client is a Network Access Server that desires to authenticate its links. The server is a server that has access to a user database with authentication information.

IP Address: Enter the RADIUS Server's IP Address provided by your ISP.

Port: Enter the RADIUS Server's port number provided by your ISP. (The default is 1812.)

Shared Secret: Enter the password that the Wireless Router shares with the RADIUS Server.

Session Timeout: Session timeout interval is for 802.1x re-authentication setting. Set to zero to disable 802.1x re-authentication service for each session. Session timeout interval unit is second and must be larger than 60.

Idle Timeout: Enter the idle timeout in the column.

Access Policy	
Policy	Set access control policy of the stations. Select Disable, Allow or Reject form the pull-down menu.
Add a station Mac	Enter a station MAC in the blank field. The maximum rule count is 8.

4.6.3. WDS

Making a connection between access points by using WDS function, please follow below steps.

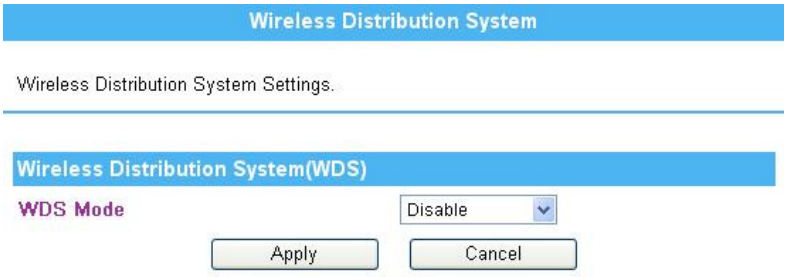
4.6.3.1. The APs must support WDS function.
(To set WDS must use the same wireless product (the same model will be better); due to different wireless products might support different WDS settings. Thus, it is suggested to use the same wireless products that support WDS function.)

4.6.3.2. To set the same SSID on the APs.

4.6.3.3. To set the same channel on the APs.

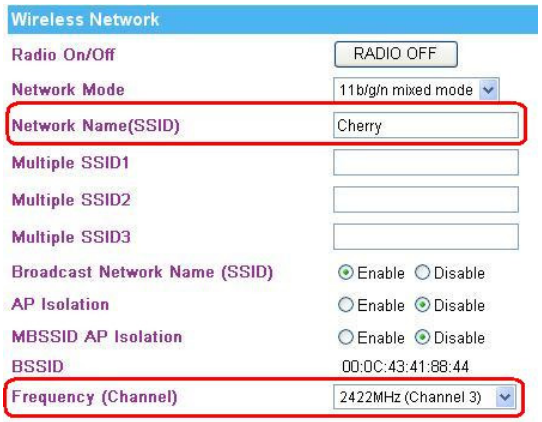
4.6.3.4. To set the same Wireless MAC address (BSSID) on the APs.

4.6.3.5. To set same security (WEP or WPA) on the APs.

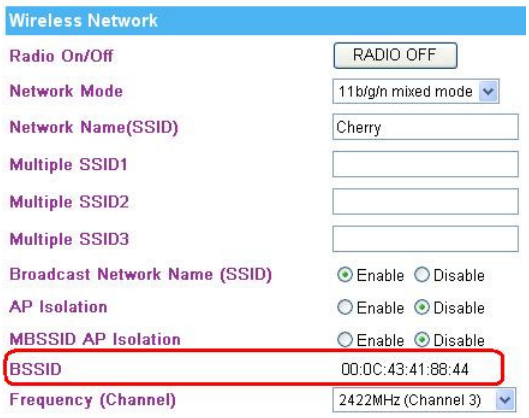


Select the mode from the pull-down menu, Disable, Bridge Mode or Repeater Mode. (Default WDS mode is Disable.) If the users would like to set up the WDS function, please go to Wireless▶Basic to set up APs that should use the same SSID(case-sensitive) and Channel , then go back to Wireless▶WDS to enter Wireless MAC address(BSSID) of each other to make the WDS connection.

Step 1:
Setup the same SSID and Channel on wireless APs.

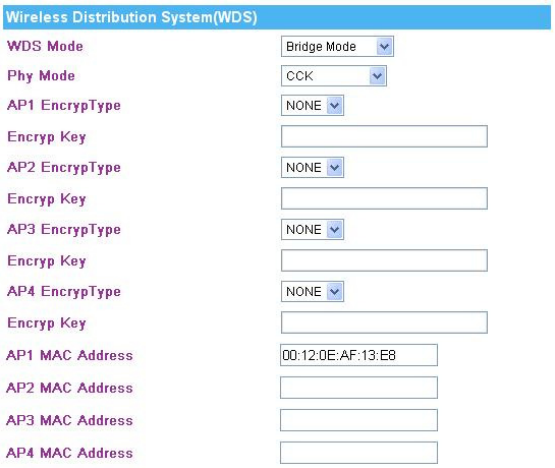


Step 2:
Enter Wireless MAC address (BSSID) to each other.



Bridge Mode

If the Bridge mode be selected, set up Wireless MAC address to both APs to enable WDS function.



Phy Mode: Select CCK, OFDM, HTMIX or GREENFIELD from the pull-down menu. Each AP should be setup to the same Phy mode.

AP1~AP4 Encrypt Type: Users should go to the main web page of the Wireless Router Wireless settings▶Security page to set up security mode under Open System, Shared Key, AUTO(Open/Shared), WPA, WPA-PSK, WPA2, WPA2-PSK, WPA-PSK/ WPA2-PSK, WPA/WPA2.

Select NONE, WEP, TKIP and AES encryption type from pull-down menu. (Default encryption type is NONE.)

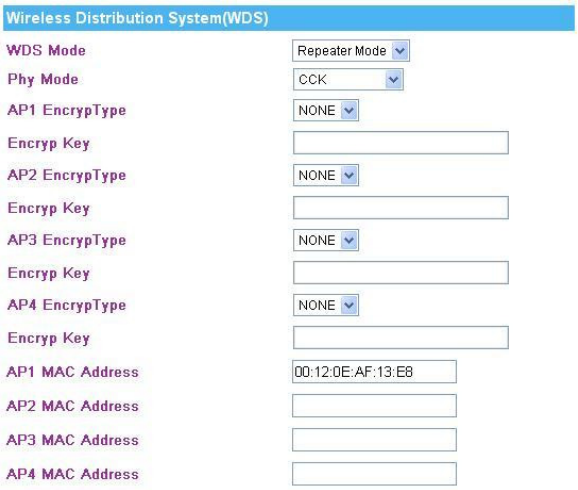
Encrypt Key: Enter the corresponding encryption keys in the field. Select the type of Open System, Shared Key, AUTO(Open/Shared) authentication, for WEP encryption.

- Hexadecimal (WEP 64 bits): 10 Hex characters (0~9, a~f).
- Hexadecimal (WEP 128 bits): 26 Hex characters (0~9, a~f).
- ASCII (WEP 64 bits): 5 ASCII characters (case-sensitive).
- ASCII (WEP 128 bits): 13 ASCII characters (case-sensitive).

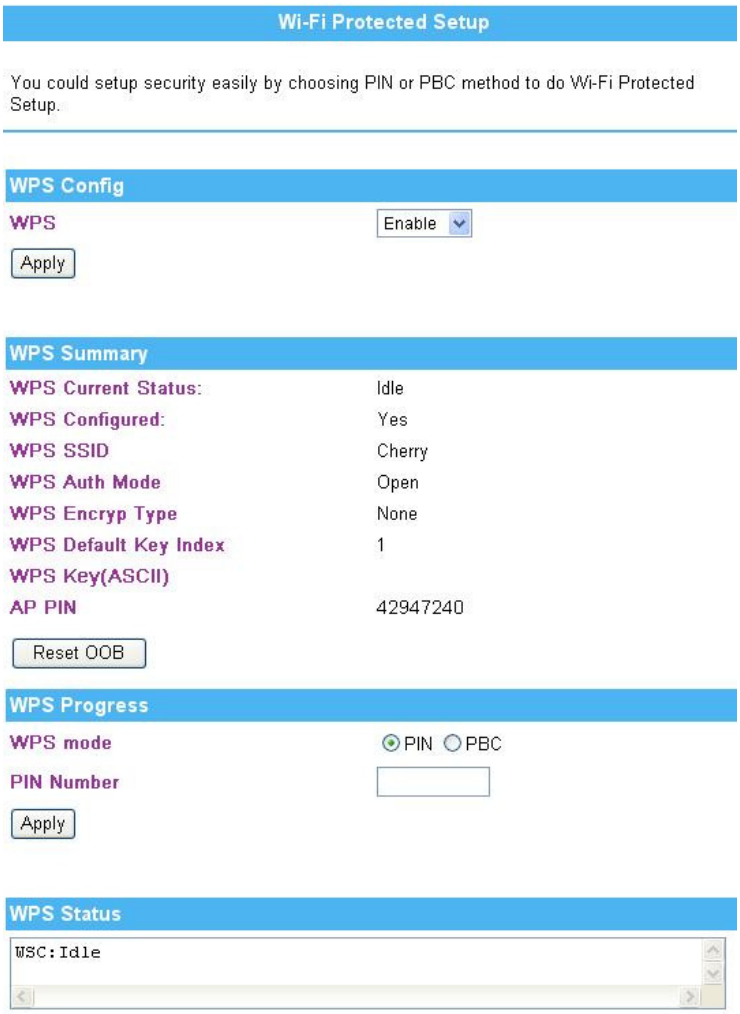
Select the type WPA, WPA-PSK, WPA2, WPA2-PSK, WPA-PSK/ WPA2-PSK, WPA/WPA2 authentication, for TKIP or AES encryption.

If users select TKIP or AES encryption, please enter the password in the Encryption Key column that must be filled with characters longer than 8 and less than 64 lengths to set up the security.

AP1~AP4 MAC Address: Enter Wireless MAC of each other to make the WDS connection.

Repeater Mode	If the Repeater mode be selected, set up Wireless MAC address to each other to enable WDS function.  Phy Mode: Select CCK, OFDM, HTMIX or GREENFIELD from the pull-down menu. Each AP should be setup to the same Phy mode. AP1~AP4 Encrypt Type: Users should go to the main web page of the Wireless Router Wireless settings►Security page to set up security mode under Open, Shared, WEP Auto, WPA, WPA-PSK, WPA2, WPA2-PSK, WPA-PSK/ WPA2-PSK, WPA/WPA2. Select NONE, WEP, TKIP and AES encryption type from pull-down menu. (Default encryption type is NONE.) Encrypt Key: Enter the corresponding encryption keys in the field. Select the type of Open, Shared, WEP Auto authentication, for WEP encryption. • Hexadecimal (WEP 64 bits): 10 Hex characters (0~9, a~f). • Hexadecimal (WEP 128 bits): 26 Hex characters (0~9, a~f). • ASCII (WEP 64 bits): 5 ASCII characters (case-sensitive). • ASCII (WEP 128 bits): 13 ASCII characters (case-sensitive). Select the type WPA, WPA-PSK, WPA2, WPA2-PSK, WPA-PSK/ WPA2-PSK, WPA/WPA2 authentication, for TKIP or AES encryption. If users select TKIP or AES encryption, please enter the password in the Encryption Key column that must be filled with characters longer than 8 and less than 64 lengths to set up the security. AP1~AP4 MAC Address: Enter Wireless MAC of each other to make the WDS connection.

4.6.4. WPS



WPS Config	
WPS	Select **Enable** then click **Apply** to use WPS (Wi-Fi Protected Setup) function, and then push physical WPS button on Wireless Router to make a WPS connection. Default setting is **Disable**.

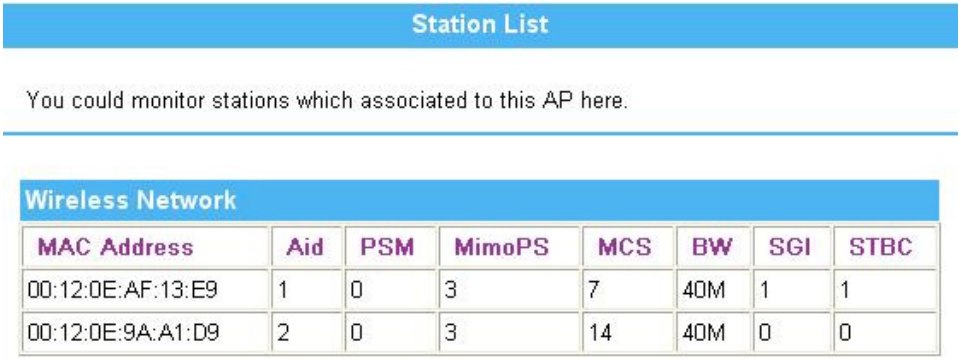
WPS Summary	
WPS Current Status	After enabling the WPS function, if there is connection the status will show Configured, otherwise, the status will show Idle.

WPS Configured	Trigger WPS AP to do simple config with WPS Client. If WPS configured, here shows Yes, otherwise, NO.
WPS SSID	Shows the Wireless Router network name.
WPS Auth Mode	The WPS authentication type supports **Open, Shared, WEP Auto, WPA-PSK, WPA2, WPA2-PSK**, **WPA-PSK/ WPA2-PSK**. Please go to the configuration page **Wireless Settings►Security** to set up the WPS security.
WPS Encrypt Type	For **Open** authentication mode, the selection of encryption type are **NONE** and **WEP**. For **WPA-PSK, WPA2-PSK** and **WPA-PSK/ WPA2-PSK** authentication mode, the encryption type supports **TKIP, AES** and **TKIP/AES**.
WPS Default Key Index	Shows the WEP default key (1~4).
WPS Key(ASCII)	Shows the WPS security keys (ASCII). The key can be used to ensure the security of the wireless network.
AP PIN	Here shows the AP's PIN code (Personal Identification Number) that the enrollee should enter the registrar's PIN code to make a connection.
Reset OOB	Reset WPS AP to the OOB (out-of-box) configuration.

WPS Process	
WPS mode	**PIN**: **Personal Identification Number**. Select PIN then click **Apply** to make a WPS connection. **BC**: **Push Button Communication**. Select PBC then click **Apply** to make a WPS connection.
PIN Number	Personal Identification Number. Input Enrollee's Pin Code to AP-Registrar.
WPS Status	Here shows the current status of the WPS. If there is connection the status shows WSC Success, otherwise, the status shows Idle.

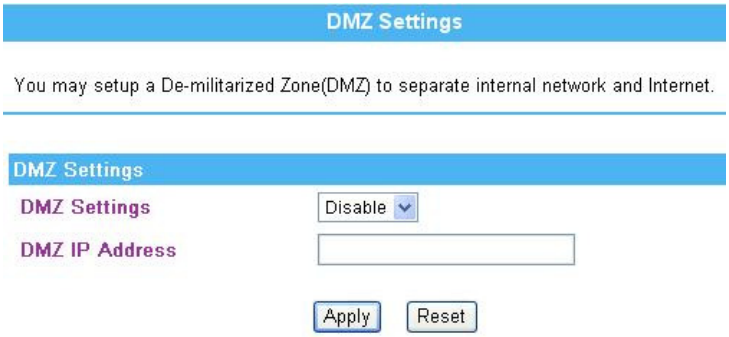
4.6.5. Station List

Here shows the station information that connected with the Wireless Router.



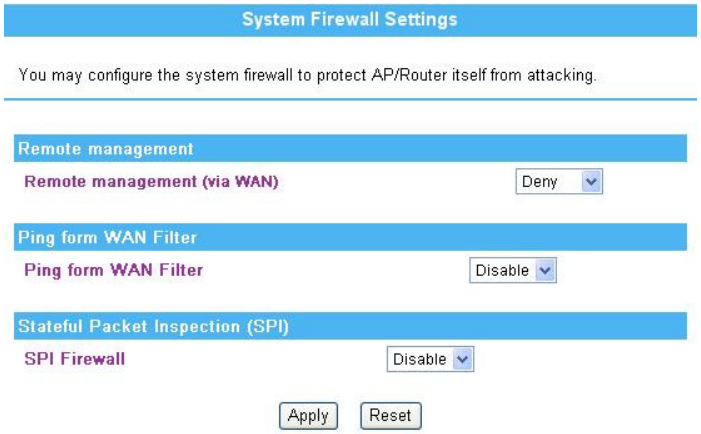
4.7 Firewall

4.7.1. DMZ



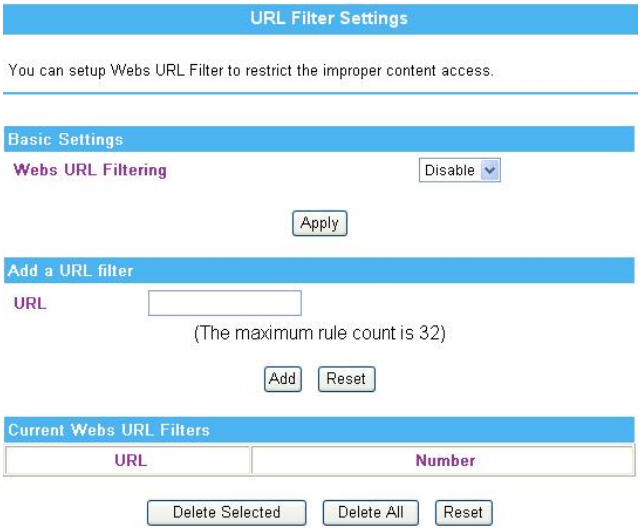
DMZ Settings	If the DMZ Host Function is enabled, it means that you set up DMZ host at a particular computer to be exposed to the Internet so that some applications/software, especially Internet / online game can have two-way connections. Select Enable or Disable from the pull-down menu. Default setting is Disable.
DMZ IP Address	Enter the IP address of a particular host in your LAN that will access the local host from WAN side.
Apply	Click to save and apply the current settings.
Reset	Press to discard current settings.

4.7.2. System Firewall Settings



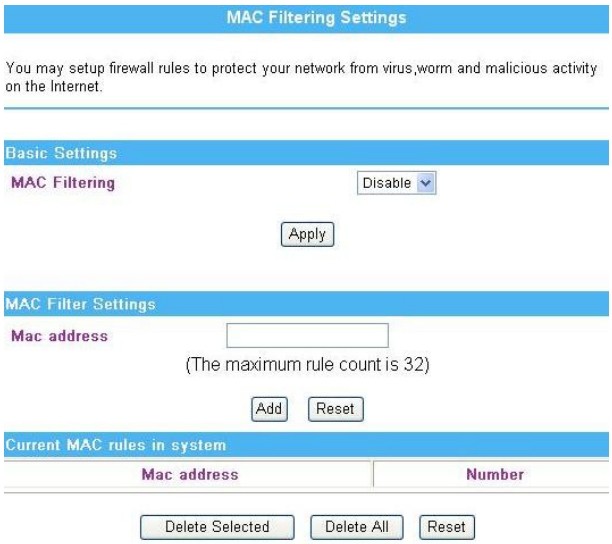
Remote management (via WAN)	Select **Deny** or **Allow** form the pull-down list to enable or disable the remote client to control the Wireless Router via WAN. Default setting is Deny.
Ping form WAN Filter	Select Disable or Enable from the pull-down list. Default setting is Disable.
SPI Firewall	Stateful packet inspection (SPI) is a firewall that keeps track of the state of network connections (such as TCP streams, UDP communication) traveling across it. The firewall is programmed to distinguish legitimate packets for different types of connections. Only packets matching a known connection state will be allowed by the firewall; others will be rejected. Select Disable or Enable the SPI firewall function from the pull-down list. Default setting is Disable.

4.7.3. URL Filtering Settings



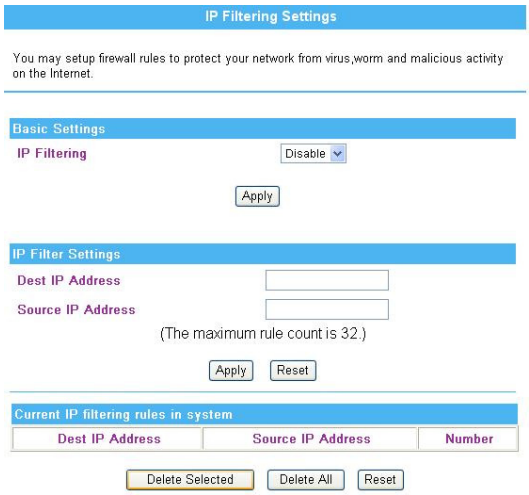
Webs URL Filtering	Select Disable or Enable from the pull-down menu. Default setting is Disable.
URL	Enter the IP address or URL to restrict the improper content access.
URL	Here shows the URL information that added in the URL filter list.
Number	Here shows the number that URL listed. The maximum rule count is 32.

4.7.4. MAC Filtering



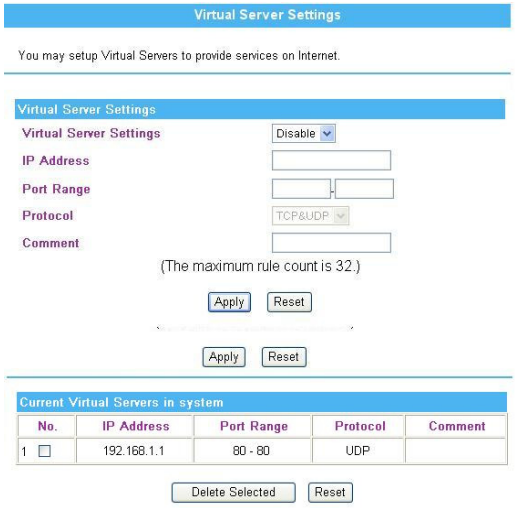
MAC Filtering	Select Enable or Disable from the pull-down list. Default setting is Disable.
MAC Address	Enter the client MAC address that user would like to disconnect.
MAC Address	Here shows the MAC address that added in the filter list.
Number	Here shows the number that MAC address listed. The maximum rule count is 32.

4.7.5. IP Filtering



IP Filtering	Select Enable or Disable from the pull-down list. Default setting is Disable.
Dest IP Address	Enter the local server's IP address.
Source IP Address	Enter the source IP address.
Dest IP Address	Here shows the Dest IP address that added in the filter list.
Source IP Address	Here shows the Source IP address that added in the filter list.
Number	Here shows the number that IP address listed. The maximum rule count is 32.

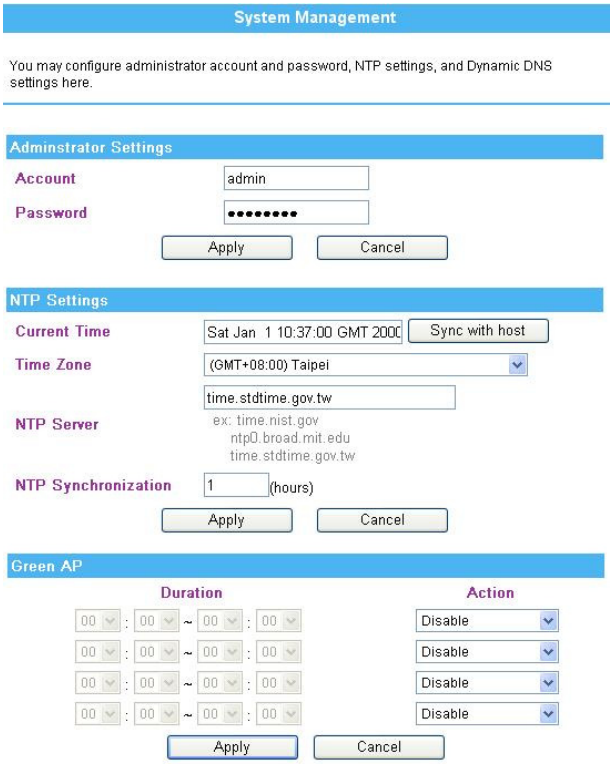
4.7.6. Virtual Server



Virtual Server Settings	Select Enable or Disable from the pull-down menu.
IP Address	Enter the local server's IP address.
Port Range	For TCP and UDP services enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.
Protocol	Select the protocol (TCP, UDP or TCP&UDP) used to the remote system or service.
Comment	Please key in a description for the IP address.
No. IP address Port range Protocol	Here shows the IP address, Port range, Protocol information that added in the list. The maximum rule count is 32.

4.8 Administration

4.8.1. Management

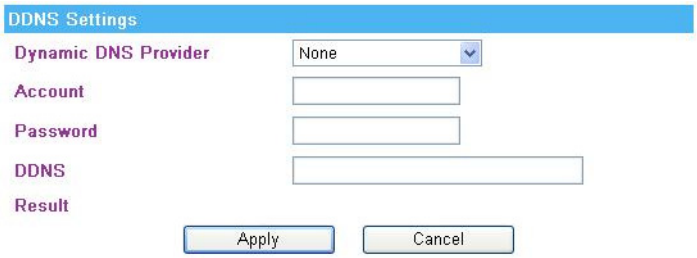


Administrator Settings	
Account	Key in a new login user name in the blank field.
Password	Maximum input is 36 alphanumeric characters (case-sensitive.)

NTP Settings	
Current Time	Click **Sync with host** button to synchronize the time with the host PC.
Time Zone	Select the time zone area that you located from the pull-down list.
NTP Server	Enter the Network Time Protocol Server here. Ex: time.nist.gov, ntp0.broad.mit.edu, or time.stdtime.gov.tw.
NTP synchronization	The device will synchronize time with the server according to the hour(s) that entered.

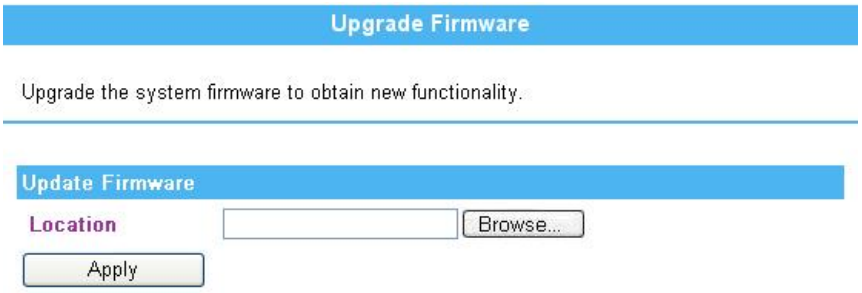
Green AP	
Duration	After the Action (WiFi TX power) be enabled, then the duration time can be set up. Set up a period of time to enable or disable the wireless TX function.
Action	Select Disable, WiFi TX power OFF, WiFi TX power 25%, WiFi TX power 50%, or WiFi TX power 75% from the pull-down menu, to enable or disable the wireless TX function of the Wireless Router.

4.8.2. DDNS



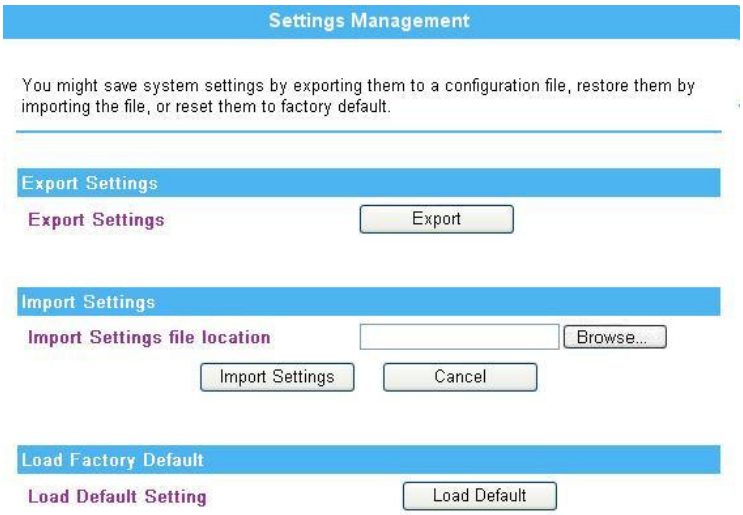
DDNS Settings	
Dynamic DNS Provider	Select the DNS provider form the pull-down list. DNS provider is a company that provides access to the internet.
Account	Enter your account that registered in DNS provider website.
Password	Enter passwords that registered.
DDNS	Apply for a Domain Name, and ensure it is allocated to you.
Result	Here shows the DDNS status.

4.8.3. Upload Firmware



Location	Click the **Browse...** button, find and open the firmware file (the browser will display to correct file path) then click **Apply** to upgrade the Wireless Router's firmware. **Notice!** **Please DO NOT power OFF the Wireless Router while upgrading firmware.**

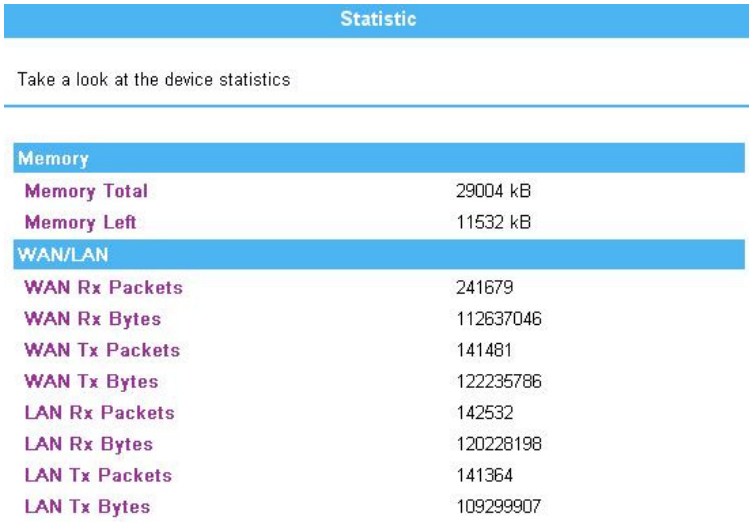
4.8.4. Settings Management



Export	Click the **Export** button to save the current device settings to located computer.
Import Settings	Click the **Browse...** button, find and open the settings file (the browser will display to correct file path), then click the **Import Settings** button to use the device settings that previous saved.
Cancel	Click to discard the file that you selected form your located computer.
Load Default	Click to **Load Default** button to set the Wireless Router back to factory default settings.

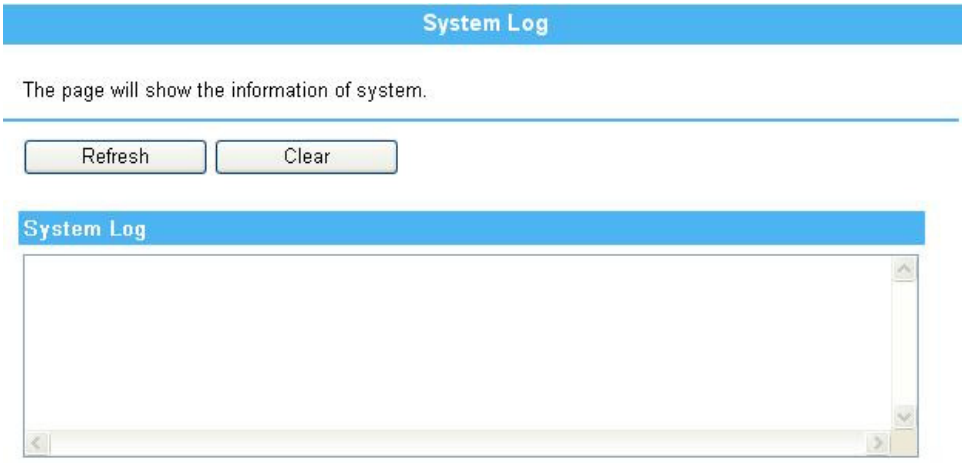
4.8.5. Statistics

This page shows all system memory, WAN/LAN, all interfaces statistics.



4.8.6. System Log

Here shows the system log file information. Click Refresh button to update system log file, or click Clear button to review the log file.



4.8.7. Reboot

Click the Reboot button to restart the Wireless Router.

CHAPTER 5 – PC CONFIGURATION

5.1 Overview

For each PC, the following may need to be configured:

- TCP/IP network settings
- Internet Access configuration
- Wireless configuration

5.2 Windows Clients

- This section describes how to configure Windows clients for Internet access via the Wireless Router.
- The first step is to check the PC's TCP/IP settings.
- The Wireless Router uses the TCP/IP network protocol for all functions, so it is essential that the TCP/IP protocol be installed and configured on each PC.

5.2.1 TCP/IP Settings - Overview

If using default Wireless Router settings, and default Windows TCP/IP settings, no changes need to be made.

- By default, the Wireless Router will act as a DHCP Server, automatically providing a suitable IP Address (and related information) to each PC when the PC boots.
- For all non-Server versions of Windows, the default TCP/IP setting is to act as a DHCP client.

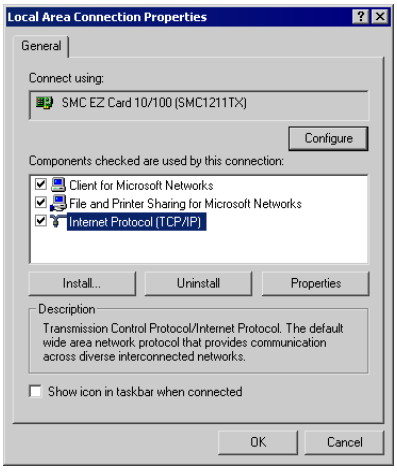
If using a Fixed (specified) IP address, the following changes are required:

- The Gateway must be set to the IP address of the Wireless Router.
- The DNS should be set to the address provided by your ISP.

5.2.2 Checking TCP/IP Settings - Windows 2000

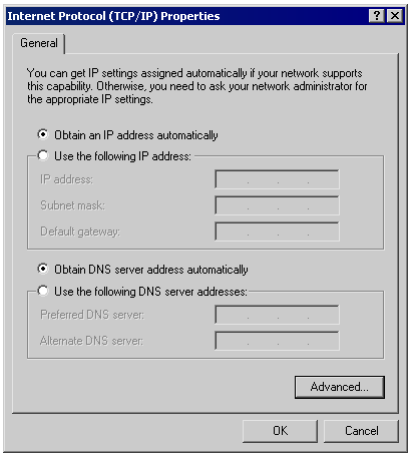
a. Select Control Panel - Network and Dial-up Connection.

b. Right - click the Local Area Connection icon and select Properties.



c. Select the TCP/IP protocol for your network card.

d. Click on the Properties button.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

5.2.2 Ensure your TCP/IP settings are correct, as described below.

5.2.3.1 Using DHCP

- To use DHCP, select the radio button Obtain an IP Address automatically. This is the default Windows setting. Using this is recommended. By default, the Wireless Router will act as a DHCP Server.
- Restart your PC to ensure it obtains an IP Address from the Wireless Router.

5.2.3.2 Using a fixed IP Address ("Use the following IP Address")

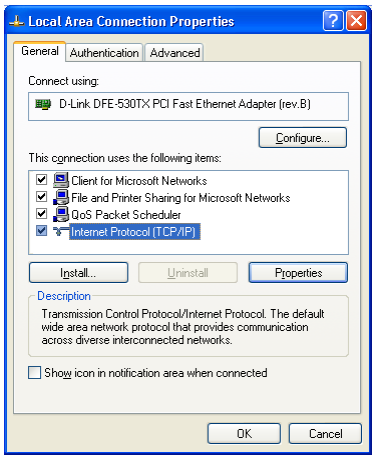
If your PC is already configured, check with your network administrator before making the following changes.

- Enter the Wireless Router's IP address in the Default gateway field and click OK. (Your LAN administrator can advise you of the IP Address they assigned to the Wireless Router.)
- If the DNS Server fields are empty, select Use the following DNS server addresses, and enters the DNS address or addresses provided by your ISP, then click OK.

5.2.4 Checking TCP/IP Settings - Windows XP

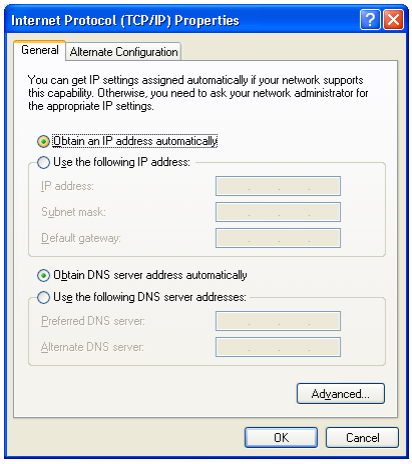
a. Select Control Panel - Network Connection.

b. Right click the Local Area Connection and choose Properties. You should see a screen like the following:



c. Select the TCP/IP protocol for your network card.

d. Click on the Properties button. You should then see a screen like the following.


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

e. Ensure your TCP/IP settings are correct.

5.2.4.1 Using DHCP

- To use DHCP, select the radio button Obtain an IP Address automatically. This is the default Windows setting. Using this is recommended. By default, the Wireless Router will act as a DHCP Server.
- Restart your PC to ensure it obtains an IP Address from the Wireless Router.
- Using a fixed IP Address ("Use the following IP Address")
- If your PC is already configured, check with your network administrator before making the following changes.

- In the Default gateway field, enter the Wireless Router's IP address and click OK. Your LAN administrator can advise you of the IP Address they assigned to the Wireless Router.
- If the DNS Server fields are empty, select Use the following DNS server addresses, and enters the DNS address or addresses provided by your ISP, then click OK.

5.2.5 Internet Access

To configure your PCs to use the Wireless Router for Internet access:

- Ensure that the ADSL modem, DSL modem, Cable modem, or other permanent connection is functional.
- Use the following procedure to configure your Browser to access the Internet via the LAN, rather than by a Dial-up connection.

5.2.5.1 For Windows 2000

a. Select Start Menu - Settings - Control Panel - Internet Options.
b. Select the Connection tab, and click the Setup button.
c. Select "I want to set up my Internet connection manually, or I want to connect through a local area network (LAN)" and click Next.
d. Select "I connect through a local area network (LAN)" and click Next.
e. Ensure all of the boxes on the following Local area network Internet Configuration screen are unchecked.
f. Check the "No" option when prompted "Do you want to set up an Internet mail account now?"
g. Click Finish to close the Internet Connection Wizard. Setup is now completed.

5.2.5.2 For Windows XP

a. Select Start Menu - Control Panel - Network and Internet Connections.
b. Select Set up or change your Internet Connection.
c. Select the Connection tab, and click the Setup button.
d. Cancel the pop-up "Location Information" screen.
e. Click Next on the "New Connection Wizard" screen.
f. Select "Connect to the Internet" and click Next.
g. Select "Set up my connection manually" and click Next.
h. Check "Connect using a broadband connection that is always on" and click Next.
i. Click Finish to close the New Connection Wizard. Setup is now completed.

5.2.5.3 Accessing AOL

To access AOL (America On Line) through the Wireless Router, the AOL for Windows software must be configured to use TCP/IP network access, rather than a dial-up connection. The configuration process is as follows:

a. Start the AOL for Windows communication software. Ensure that it is Version 2.5, 3.0 or later. This procedure will not work with earlier versions.
b. Click the Setup button.
c. Select Create Location, and change the location name from "New Locality" to "Wireless Router".
d. Click Edit Location. Select TCP/IP for the Network field. (Leave the Phone Number blank.)
e. Click Save, then OK.
f. Configuration is now complete.
g. Before clicking "Sign On", always ensure that you are using the "Wireless Router" location.

5.3 Macintosh Clients

From your Macintosh, you can access the Internet via the Wireless Router. The procedure is as follows.

a. Open the TCP/IP Control Panel.
b. Select Ethernet from the Connect via pop-up menu.
c. Select Using DHCP Server from the Configure pop-up menu. The DHCP Client ID field can be left blank.
d. Close the TCP/IP panel, saving your settings.

Note:

If using manually assigned IP addresses instead of DHCP, the required changes are:

- Set the Router Address field to the Wireless Router's IP Address.
- Ensure your DNS settings are correct.

5.4 Linux Clients

To access the Internet via the Wireless Router, it is only necessary to set the Wireless Router as the "Gateway".

Ensure you are logged in as "root" before attempting any changes.

5.4.1 Fixed IP Address

By default, most Unix installations use a fixed IP Address. If you wish to continue using a fixed IP Address, make the following changes to your configuration.

- Set your "Default Gateway" to the IP Address of the Wireless Router.
- Ensure your DNS (Domain Name server) settings are correct.

5.4.2 To act as a DHCP Client (Recommended)

The procedure below may vary according to your version of Linux and X -windows shell.

1. Start your X Windows client.
2. Select Control Panel – Network.
3. Select the "Interface" entry for your Network card. Normally, this will be called "eth0".
4. Click the Edit button, set the "protocol" to "DHCP", and save this data.
5. To apply your changes:
    - Use the "Deactivate" and "Activate" buttons, if available.
    - OR, restart your system.

5.5 Other Unix System Clients

To access the Internet via the Wireless Router:

- Ensure the "Gateway" field for your network card is set to the IP Address of the Wireless Router.
- Ensure your DNS (Name Server) settings are correct.

5.6 Wireless Station Configuration

- This section applies to all wireless stations wishing to use the Wireless Router's access point, regardless of the operating system that is used on the client.
- To use the Wireless Router, each wireless station must have compatible settings, as following:

Mode	**The mode must be set to Infrastructure.**
SSID (ESSID)	The network name must match the value used on the Wireless Router. Note! The SSID is case sensitive.
Open **Shared Key**	If there is no security is enabled on the Wireless Router, the security of each station should be disabled as well. And, you can connect the Wireless Router without security, but it is NOT recommended.
WEP auto	By default, WEP on the Wireless Router is disabled. If WEP remains disabled on the Wireless Router, all stations must have WEP disabled. If WEP is enabled on the Wireless Router, each station must use the same settings as the Wireless Router.
WPA-PSK **WPA2-PSK** **WPA-PSK** **WPA2-PSK**	WPA-PSK (TKIP/AES)/ WPA2-PSK (TKIP/AES)/ WPA-RADIUS (TKIP/AES)/ WPA2 -RADIUS (TKIP/AES): If one of these securities is enabled on the Wireless Router. To make a connection, each station must use the same algorithms and pass phrase as the Wireless Router.
WPA **WPA2** **WPA WPA2** **802.1x**	RADIUS Server: RADIUS is an authentication, authorization and accounting client-server protocol. The client is a Network Access Server that desires to authenticate its links. The server is a server that has access to a user database with authentication information. Each station must set up the RADIUS Server's IP address, port and passwords that provided by your ISP.

Note:

By default, the Wireless Router will allow 802.11b, 802.11g and 802.11n connections.

APPENDIX A – TROUBLESHOOTING

A.1 Overview

This chapter covers some common problems that may be encountered while using the Wireless Router and some possible solutions to them. If you follow the suggested steps and the Wireless Router still does not function properly, contact your dealer for further advice.

A.2 General Problems

Problem 1: Can't connect to the Wireless Router to configure it.

Solution 1: Check the following:

1. Check the Wireless Router is properly installed, LAN connections are OK, and it is powered ON.
2. Ensure that your PC and the Wireless Router are on the same network segment.
3. If your PC is set to "Obtain an IP Address automatically" (DHCP client), please restart it.
4. If your PC uses a Fixed (Static) IP address, ensure that it is using an IP Address within the range 192.168.10.1 to 192.168.10.253 and thus compatible with the Wireless Router's default IP Address of 192.168.10.254.
   Also, the Network Mask should be set to 255.255.255.0 to match the Wireless Router.
   In Windows, you can check these settings by using Control Panel-Network to check the Properties for the TCP/IP protocol.

A.3 Internet Access

Problem 1: When I enter a URL or IP address I get a time out error.

Solution 1: A number of things could be causing this. Try the following troubleshooting steps.

- Check if other PCs work. If they do, ensure that your PCs IP settings are correct. If using a Fixed (Static) IP Address, check the Network Mask, Default gateway and DNS as well as the IP Address.
- If the PCs are configured correctly, but still not working, check the Wireless Router. Ensure that it is connected and ON. Connect to it and check its settings. (If you can't connect to it, check the LAN and power connections.)
- If the Wireless Router is configured correctly, check your Internet connection (DSL/Cable modem etc) to see that it is working correctly.

Problem 2: Some applications do not run properly when using the Wireless Router.

Solution 2: The Wireless Router processes the data passing through it, so it is not transparent.

Use the Content Filter Settings feature to allow the use of Internet applications, which do not function correctly.

If this does solve the problem you can use the DMZ function. This should work with almost every application, but:

- It is a security risk, since the firewall is disabled.
- Only one (1) PC can use this feature.

A.4 Wireless Access

Problem 1: My PC can't locate the Wireless Router.

Solution 1: Check the following:

1. Your PC is set to Infrastructure Mode. (Access Points are always in Infrastructure Mode)
2. The SSID on your PC and the Wireless Router are the same.
   Remember that the SSID is case-sensitive. So, for example "Workgroup" does NOT match "workgroup."
3. Both your PC and the Wireless Router must have the same setting for security. The default setting for the Wireless Router security is disabled, so your wireless station should also have security disabled.
4. If security is enabled on the Wireless Router, your PC must have security enabled, and the key must be matched.
5. To see if radio interference is causing a problem, see if connection is possible when close to the Wireless Router.
   Remember that the connection range can be as little as 100 feet in poor environments.

Problem 2: Wireless connection speed is very slow.

Solution 2: The wireless system will connect at the highest possible speed, depending on the distance and the environment. To obtain the highest possible connection speed, you can experiment with the following:

1. Wireless Router location
   Try adjusting the location and orientation of the Wireless Router.
2. Wireless Channel
   If interference is the problem, changing to another channel may show a marked improvement.
3. Radio Interference
   Other devices may be causing interference. You can experiment by switching other devices off, and see if this helps. Any "noisy" devices should be shielded or relocated.
4. RF Shielding
   Your environment may tend to block transmission between the wireless stations. This will mean high access speed is only possible when close to the Wireless Router.

APPENDIX B – ABOUT WIRELESS LAN

B.1 BBS

A group of Wireless Stations and a single Access Point, all using the same ID (SSID), form a Basic Service Set (BSS).

Using the same SSID is essential. Devices with different SSIDs are unable to communicate with each other.

B.2 Channels

The Wireless Channel sets the radio frequency used for communication.

- Access Points use a fixed Channel. You can select the Channel used. This allows you to choose a Channel which provides the least interference and best performance. In the USA and Canada, 11 channels are available. If using multiple Access Points, it is better if adjacent Access Points use different Channels to reduce interference.
- In "Infrastructure" mode, Wireless Stations normally scan all Channels, looking for an Access Point. If more than one Access Point can be used, the one with the strongest signal is used. (This can only happen within an ESS.)

Note to US model owner: To comply with US FCC regulation, the country selection function has been completely removed from all US models. The above function is for non-US models only.

B.3 Security

B3.1 WEP

WEP (Wired Equivalent Privacy) is a standard for encrypting data before it is transmitted. This is desirable because it is impossible to prevent snoopers from receiving any data which is transmitted by your Wireless Stations. But if the data is encrypted, then it is meaningless unless the receiver can decrypt it.

If WEP is used, the Wireless Stations and the Access Point must have the same security settings for each of the following:

WEP	64 Bits, 128 Bits.
Key	For 64 Bits encryption, the Key value must match. For 128 Bits encryption, the Key value must match.
WEP Authentication	Open System or Shared Key.

B3.2 WPA/WPA2

WPA/WPA2 (Wi-Fi Protected Access) is more secure than WEP. It uses a "Shared Key" which allows the encryption keys to be regenerated at a specified interval. There are several encryption options: TKIP, AES, TKIP-AES and additional setup for RADIUS is required in this method. The most important features beyond WPA to become standardized through 802.11i/WPA2 are: pre-authentication, which enables secure fast roaming without noticeable signal latency.

If WPA or WPA2 is used, the Wireless Stations and the Access Point must have the same security settings.

B3.3 WPA-PSK/WPA2-PSK

WPA/WPA2 (Wi-Fi Protected Access using Pre-Shared Key) is recommended for users who are not using a RADIUS server in a home environment and all their clients support WPA/WPA2. This method provides a better security.

If WPA-PSK or WPA2-PSK is used, the Wireless Stations and the Access Point must have the same security settings.

Encryption	WEP Key 1~4	Passphrase
TKIP	NOT REQUIRED	8-63 characters
Encryption		

B3.4 802.1x

With 802.1x authentication, a wireless PC can join any network and receive any messages that are not encrypted, however, additional setup for RADIUS to issue the WEP key dynamically will be required.

RADIUS is an authentication, authorization, and accounting client-server protocol. The client is a Network Access Server that desires to authenticate its links. The server is a server that has access to a user database with authentication information.

B.4 Wireless LAN Configuration

To allow Wireless Stations to use the Access Point, the Wireless Stations and the Access Point must use the same settings, as follows:

Mode	**The mode must be set to Infrastructure.**
SSID (ESSID)	The network name must match the value used on the Wireless Router. Note! The SSID is case sensitive.
Open **Shared Key**	If there is no security is enabled on the Wireless Router, the security of each station should be disabled as well. And, you can connect the Wireless Router without security, but it is NOT recommended.
WEP AUTO	By default, WEP on the Wireless Router is disabled. If WEP remains disabled on the Wireless Router, all stations must have WEP disabled. If WEP is enabled on the Wireless Router, each station must use the same settings as the Wireless Router.
WPA-PSK **WPA2-PSK** **WPA-PSK** **WPA2-PSK**	WPA-PSK (TKIP/AES)/ WPA2-PSK (TKIP/AES: If one of these securities is enabled on the Wireless Router. To make a connection, each station must use the same algorithms and pass phrase as the Wireless Router.
WPA **WPA2** **WPA WPA2** **802.1x**	RADIUS Server: RADIUS is an authentication, authorization and accounting client-server protocol. The client is a Network Access Server that desires to authenticate its links. The server is a server that has access to a user database with authentication information. Each station must set up the RADIUS Server's IP address, port and passwords that provided by your ISP.

APPENDIX C – TECHNICAL SUPPORT

REGISTER ONLINE FOR FREE WARRANTY.

FREE TECHNICAL SUPPORT HOTLINE:

Monday to Friday, 9.00 am – 6.00 pm
(Closed on Saturdays, Sundays and Public Holidays)

- Singapore : (65) 6357 0666
- Malaysia : (60) 3 8023 9151
- Indonesia : (62) 21 628 3205

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Monday to Friday, 9.00 am – 6.00 pm
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